

Applicant : Robert E. Ray, Jr. et al.
Serial No. : 10/034,687
Filed : December 20, 2001
For : Electrochemical Cell Having Venting Current Collector and Seal Assembly

Art Unit: 1745
Examiner: Gregg Cantelmo

REMARKS

Claims 1-44 remain in the application. Reconsideration and reexamination of the application are requested.

In the Office action mailed on May 3, 2004, the Examiner rejected claims 1-5, 7, 13-18, 20-24, 28-35, 37, 43 and 44 under 35 USC §103(a) as unpatentable over Japanese Patent Publication No. 59-33751 (JP '751) and claims 6, 19 and 36 under 35 USC §103(a) as unpatentable over JP '751 in view of US Patent No. 5,188,909 (Pedicini). The Examiner found claims 8-12, 25-27 and 38-42 to be allowable if rewritten to overcome the rejection under 35 USC §112, second paragraph and to include all of the limitations of the base claim and any intervening claims. The rejection under 35 USC §112, second paragraph was withdrawn in light of the amendment filed February 25, 2004. Applicants respectfully disagree with the rejection of claims 1-5, 7, 13-18, 20-24, 28-35, 37, 43 and 44 under 35 USC §103(a) as unpatentable over JP '751 for the reasons given below.

The Examiner rejected claims 1-5, 7, 13-18, 20-24, 28-35, 37, 43 and 44 under 35 USC § 103(a) as being unpatentable over JP '751. The Examiner acknowledged that JP '751 does not disclose providing a pressure relief passage between the seal member and the current collector to vent pressurized gases, a feature which is found in each of the independent claims 1, 16, 24 and 32. The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of JP '751 by forming the vent passage between the seal and current collector. It is believed that the Examiner has failed to establish a *prima facie* case of obviousness over JP '751 because to establish a *prima facie* case of obviousness does not teach or suggest all of the limitations of the independent claims and there is no suggestion or motivation found in JP '751 to modify the cell disclosed to arrive at the present invention.

The Examiner asserted that JP '751 (Figs. 2 and 3) shows that the general concept of moving the current collector relative to a seal member in a battery to create a vent passage between them is known and that JP '751 teaches that forming the vent structure between at least a significant portion of the seal and the current collector provides an optimal venting design in a battery. However, JP '751 does not show the general concept of moving the current collector

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relative to a seal member to create a vent passage between them; rather, the vent passage is created between parts 6a and 6b of the seal member, and the current collector moves together with the central portion of the seal member.

The Examiner referred to page 16, lines 1-5 of the present application, which discloses that other embodiments are possible in which other vent passages may also be provided, such as when the relative movement between the seal and collector may be designed to cause the seal hub to split open. Such splitting of the hub can serve to further enlarge the vent passage between the seal and the collector, thereby releasing gases from the cell more quickly. This, too, is different from the teachings of JP '751, in which the hub (part 6a) moves along with the collector and remains intact and in contact with the collector to form a vent passage between the hub and the remainder of the seal.

The Examiner also noted that JP '751 shows a general vent passage and seal/current collector arrangement wherein the vent passage is formed proximate to the collector shaft adjacent a significant portion of the seal and asserted that slight variations of the seal/current collector arrangement, including the particular arrangement of the present invention are obvious variants that provide the same function. However, the differences between the present invention and the teachings of JP '751 are not "slight". First, the invention disclosed in JP '751 is like the conventional battery shown in Figs. 6, 7 and 10 of JP '751 in that the vent passage is created between the central hub and the remainder of the seal member; in both the vent passage is created by separation of the hub from at least a portion of the remainder of the seal member, the difference being that the invention of JP '751 does not require the breaking of a thin part of the seal member. Second, the JP '751 invention has several disadvantages that are not found in the present invention. As the Examiner noted, the cells in Figs. 1-5, 8 and 9 have an additional component (the seal member has two separately molded components 6a and 6b), requiring additional processing steps. The cell in JP '751 also has an additional interface that must be sealed (surfaces 6c and 6d), and an asphalt sealant is used to help seal that interface. While JP '751 discloses that testing at high temperature and humidity showed no leakage, there is an added potential for leakage with the additional seal interface, and adding a seal interface to the cell is not consistent with the object of the present invention of providing enhanced leakage performance.

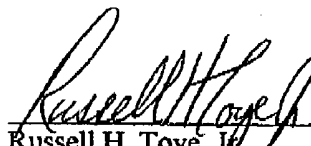
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The Examiner asserted that there is motivation for providing the vent passage between the seal and current collector shaft, since it would have reduced the steps in forming the seal member while still providing the requisite and effect vent passage near or along the current collector shaft and adjacent to the seal. However, JP '751 does not suggest modifying the cell design in this manner. In fact, JP '751 teaches away from reducing the number of cell components in that a two-part seal member is substituted for a one-part seal member, and a seal member with two separately molded parts is a required feature of the claimed invention. No motivation for providing the vent passage between the seal and current collector shaft is found in JP '751. While it is generally known in the art that there advantages to reducing the number of components in a battery, nothing in JP '751 teaches or suggests how that should be done.

For the above reasons, the rejection of independent claims 1, 16, 24 and 32 have been traversed. It is believed that claims 1-44 are in condition for allowance; withdrawal of the rejections and allowance of claims 1-44 are requested.

Respectfully submitted,

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